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REPORT
OF THE SECTION ON
PRACTICE OF MEDICINE.

1. The Relation of Dusty Occupations to Pulmonary Phthisis.
2. The Present Aspect of the Question as to the Etiology of Pneumonia.
3. The More Recent Treatment of Pulmonary Phthisis.

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Report of the Section on Practice of Medicine.

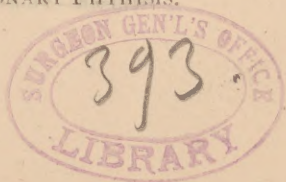
- I. THE RELATION OF DUSTY OCCUPATIONS TO PULMONARY PHTHISIS.
- II. THE PRESENT ASPECT OF THE QUESTION AS TO THE ETIOLOGY OF PNEUMONIA.
- III. THE MORE RECENT TREATMENT OF PULMONARY PHTHISIS.

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Mr. President and Gentlemen:—Owing to the sad death of the Chairman of this Section, Dr. John S. Lynch, the duty has fallen upon me at a very late date to make the report for this Section. On communicating with the other members of this Section, I find that they have no papers to offer.

In looking over the extensive field which this Section covers, I am at a loss what can best be discussed in the short time allotted to me. The enormous amount of medical literature, and the publication of various "annuals" and "year books," make a report, as was originally intended, somewhat superfluous. I have, however, taken up three topics to which I should like to call your attention for a few minutes. They are:

- I. THE RELATION OF DUSTY OCCUPATIONS TO PULMONARY PHTHISIS.
- II. THE PRESENT ASPECT OF THE QUESTION AS TO THE ETIOLOGY OF PNEUMONIA.
- III. THE MORE RECENT TREATMENT OF PULMONARY PHTHISIS.



I. THE RELATION OF DUSTY OCCUPATIONS TO PULMONARY PHTHISIS.

This question is by no means new, but it has always been of great interest to those who have much to do with diseases of the lungs. The pulmonary diseases caused by the inhalation of different kinds of dust, have received a variety of names, according to the kind of dust inhaled; but collectively they are all covered by the name "pneumoconiosis." The pathology of these conditions was not clearly understood. They were spoken of as "miner's consumption," "grinder's consumption," &c., even when their tuberculous nature could not be proven. Even after Koch's discovery of the tubercle bacillus, and the gradually improved classification of the other classes of lung diseases, there seemed to be some doubt whether these dust diseases were tuberculous or not.

Most writers agree that the inhalation of non-tubercular dust can only produce a non-tubercular disease of the lungs. Naturally, the different kinds of dust, such as sand, coal, soot, slate, etc., when inhaled in large quantities, or by persons enclosed in a thickly-laden, crowded atmosphere (unventilated mines, etc.), gradually overcome the action of the ciliated epithelium, and penetrate to the alveoli of the lungs, whence they find their way by their sharp edges through the wounded endothelium—through the pseudo-stomata in the alveolar wall, or between the cells, through the *kittsubstanz* (Osler.) Those that are not carried off, rendered harmless or devoured by the greedy phagocytes, remain in their subepithelial bed, and cause an irritation, a determination of blood, inflammation, and resulting hypertrophy and hyperplasia of the connective tissue of the lungs. There results then a fibroid condition of the lungs, a fibroid phthisis, or chronic interstitial pneumonia.

This condition seems to be produced by all kinds of dust indifferently when inhaled in condensed quantities. Fagge* says that this condition is only tubercular when tuberculous matter enters; that the common occurrence of phthisis among miners is due to the crowded and unventilated condition of the mines, and to the great and sudden changes of heat and cold to which the miners are exposed. C. J. B. Williams† thinks

*Fagge—Principles and Practice of Medicine, Phila. Blakiston, 1886, pp. 997.

†Williams—Pulmonary Consumption. Phila. Blakiston, 1887, pp. 13 and 43.

that the fibroid element seems to oppose a direct barrier to the growth and multiplication of the bacillus tuberculosis, and in large tracts of lung tissue which have been converted into this material, often not a bacillus can be detected. Moxon* says that when they are found, it is because fibrosis has supervened on a tuberculous condition of the lungs. Watson Cheyne,† Percy Kidd,‡ Sir Andrew Clark|| and others have also failed to detect bacilli in this condition. According to Orth,§ consumption is one of the rarest complications of miner's lung, and Kunze,¶ after examining the lungs of those engaged in a variety of dusty occupations, concludes that if tuberculosis is present, it is almost an accident, or was present before the patient began this occupation. The most recent literature on this subject is to be found in the Milroy Lectures on Occupations and Trades in Relation to Public Health, by John T. Arlidge, M. D., and B. A. London.

Although a fact founded on one case, perhaps imperfectly reported, may be of little value, I have thought it worth while to present the following case:

Case. J. M. Welshman, aged 56, was admitted to hospital about February 1, 1888, with the following history, imperfect on account of his want of familiarity with the English language. As a boy he had been well, and had been in health up to two years before, in Wales, where he "took a cold," which, growing worse, entirely unfitted him for his work, which was that of a miner. On inquiring more particularly as to his occupation, he said that he had been employed for about fifteen years in the slate mines of Wales, and his particular work was to split the slate. He said that there was always slate dust flying about in the air; but not in such quantities as in coal mines. Upon questioning him further, he said that the slate miners were frequently affected with a cough and a profuse, gray or blackish expectoration, and that they usually died from this cough at about fifty. He said their manner of coughing was very hard, and there was much wheezing and shortness of breath.

While talking with him, I noticed that he was a tall man, slightly bent, with anxious countenance, showing that he was suffering from dyspnoea or imperfect oxygenation. In fact, he suffered so violently at first, that it was very difficult to examine him, and most of the history was obtained at the end of his treatment.

*Williams, loc. cit.

†Practitioner, April, 1883.

‡Medico-Chirurgical Transactions, Vol. LXVIII.

||Clinical Transactions, Vol. I.

§Lehrbuch d. Spec. Path. Anat. Berlin, 1887, S. 549.

¶Beitrag zur Lehre d. Staubinhalationskrankheiten, Kiel, 1887.

Inspection showed a spare man with large chest cavity; but not barrel-shaped. On percussion, which was carried out with great difficulty, a possibly increased dulness was heard over the right apex in front and at the base behind. The left lung was slightly hyper-resonant from increased work. The vocal fremitus was not markedly different on the two sides. Auscultation gave coarse and fine mucus, and dry, sonorous and sibilant râles with expiration and inspiration over the whole chest, the expiration being much prolonged. Cough and shortness of breath were the troublesome symptoms, as was shown in his anxious expression, and in his entire inability to lie in the horizontal position.

His expectoration had been dark and also greyish-black; but recently it was white, as it was when I saw him. In order to promote expectoration, I put him on oil of turpentine in fifteen minim doses in mucilage of acacia, cinnamon water and water three times a day.

R

Ol. terebinthin.	℥ iii
Mucilag. acac.	q. s.
Aquae cinnamom.	℥ ss
Aquae q. s. ad	℥ vi

S. Take a tablespoonful, well diluted, three times a day.

But as it produced nausea, I changed to the iodide of potash, with muriate of ammonia dissolved in brown mixture.

R

Ammon. muriat.	℥ ii
Mist. glycyrrhiz. co.	℥ iv
et adde	
Potass. iodid.	℥ iii

S. Dessertspoonful, well diluted, three times daily.

This seemed to remove the mucus, but the dyspnoea still continued, and the râles, though dryer, were just as audible as before.

Dr. Fraser's article on "Dyspnoea in Bronchitis,"* having just appeared it suggested itself to me to use the nitrite of sodium, which resulted in removing much of the dyspnoea. During the whole time the sputum was examined for bits of slate dust or pigment laden cells; but they were not found. His diet was regulated and his bowels kept open. The urine was tested before turpentine was given, and albumen was found. It later disappeared.

A few weeks after he entered the hospital, the sputum was examined for tubercle bacilli, not because I expected to find them, but because I had made it a habit to examine the sputum in every chronic case for them. They were found in abundance. Specimens of sputum were examined with care at short intervals, and the bacilli were always found, and in large numbers. This surprised me, as I had not thought it tuberculous, and had given a favorable prognosis. Now, however, I feared a bad prognosis. Notwithstanding this, he continued to improve under tonics, and returned

*American Journal of the Medical Sciences, October, 1837.

in the spring to Walgs. I have heard from him within the last month, and he says he is entirely well. Whether the bacilli have disappeared or not, it is not possible to say. As I have examined the sputa for bacilli many times, I feel certain I made no mistake here, and yet it seems rather peculiar in this case.

Dr. G. Hunter Mackenzie* says that the number of tubercle bacilli found in the sputa of any case does not seem to bear any reference to the severity of the cases, and that a case may go on for years with an enormous number of bacilli found at every examination, and yet be in every other way well.

The points of interest in this case are:

1. Patient had no previous history of or predisposition to tuberculosis.
2. He contracted a disease with which tuberculosis is supposed to be very rarely present.
3. He had tubercle bacilli in his sputa in abundance.
4. He reports himself as entirely well.

II. THE PRESENT ASPECT OF THE QUESTION AS TO THE ETIOLOGY OF PNEUMONIA.

The pathology of the disease ordinarily called pneumonia is by no means clear. Ever since investigators have begun to classify diseases from a different point of view, and to find out the exciting cause or organism which causes that particular disease, the subject of pneumonia has been the object of much study and speculation. From a clinical aspect, observers had noticed that pneumonia occasionally occurred in epidemics; that "catching cold" did not always seem to account for its outbreak, as was evidenced principally in the immunity of sailors who lead exposed lives.

The literature of this subject is so extensive, and has increased so much in the last few years, that I shall only consider it hurriedly. Klebs,† Eberth‡ Koch,§ Salvioli,|| Zäselein,¶ Talamon** and others had found and described organisms in

*Edinburgh Medical Journal, January, 1889.

†Mittheilungen aus dem Kais. Gesundheitsamt, Bd. I., 1881.

‡Arch. per le Scienze Med., Vol. VIII, 1884.

§Archiv f. Exp. Path., Bd., IV, 1877.

¶Deutsches Archiv f. Klin. Med., Bd. XXVIII, 1881.

¶Centralblatt f. d. Med. Wissenschaften, 1883.

**Progrès Medical, 1883.

the lungs, pleura and kidneys of man; but Friedländer* was the first to describe what he supposed was the specific organism. It was a short bacillus surrounded by a zone or capsule. He cultivated it, and was able to produce pneumonia in mice; but not in rabbits. His pneumonococcus, as he called it, was for several years looked upon as the specific organism of pneumonia. Fränkel,† Weichselbaum,‡ Gamaléia§ and Sternberg,|| in this country, have done this most important work up to the present time.

It seems that in September, 1880, Sternberg,¶ while engaged in certain investigations in New Orleans, injected a little of his own saliva beneath the skin of a rabbit as a control experiment. To his surprise, the animal died, and in the blood was found a multitude of oval micro-organisms in pairs chains. In 1881, Pasteur,** in examining the saliva of a hydrophobic patient, injected some of it into a rabbit, and obtained similar organisms. Later Fränkel†† followed out this same line, and concluded this organism, which he called a diplococcus, was the specific organism of pneumonia, although he found occasionally other organisms present, and among them at times Friedländer's. Weichselbaum‡‡ reviewed the whole work, and repeated the experiments with no exact and definite results. He could not confirm any one specific organism; but thought the diplococcus of Fränkel was most frequently present in pneumonia, although he could not help thinking that several organisms might enter into the causation of pneumonia. Gamaléia§§ described the organism studied by him as the streptococcus lanceolatus Pasteuri. He concludes that it is always found in fibrinous pneumonia in man, and that it can be demonstrated experimentally; it produced in animals partially refractory to the virus as the dog and sheep, a fibrinous inflammation of the lungs; but its pathogenic influence is held in check in those who are healthy by the action of the pulmonary phagocytes.

*Fortschritte der Medicin, 1883, S. 715.

†Centralblatt f. Bacteriologie u. Parasitenkunde, Bd. I, S. 78, 79; Bd. III, 1887.
Zeitschr. f. Klin. Med., Bd. X, S. 401. Deutsche Med. Wochenschr., No. 13, 1886.
Zeitschr. f. Klin. Med., Bd. XI,

‡Centralblatt f. Bacteriologie u. Parasitenkunde, Bd. I, s. 297, 553, 587.

§Annales de l'institut, Pasteur, t. II, No. 8, Aug. 25, 1888.

||London Lancet, March 2, 1889, and N. Y. Med. Record, March 16, 1889.

¶Journal of the Royal Microscopical Society, June, 1886, p. 396.

**Comptes rendus, t. 92, p. 159. ††loc. cit. ‡‡loc. cit. §§loc. cit.

J. Lipari* reproduced pneumonia in animals by intratracheal inoculation of pneumonic sputa or of cultures of an organism having all the characteristics of Fränkel's diplococcus. In all cases he found the same organism in great abundance in the hæmorrhagic and sero-fibrinous pleural exudations, and in the hepatized pulmonary parenchyma, less abundant in the blood and spleen, inconstant in the liver, kidneys and pericardial and peritoneal fluids. In some cases of pericarditis, peritonitis, and abscess of the liver, the diplococci were very abundant. Inoculations of sputa or of pure cultures in the veins, in the peritoneum, or under the skin, never caused pneumonia; pneumonia occurred only when the inoculations were made through the lungs. The disease was first local, and then became general. The most recent review of this subject has been made by Sternberg.†

Most writers agree as to the identity of the micrococcus Pasteuri (Sternberg), streptococcus lanceolatus Pasteuri (Gamaleia), and the diplococcus or bacillus of Fränkel. If then this organism is found in the buccal secretion of healthy individuals, how do so many escape attacks of pneumonia? In the light of recent studies made by Metschnikoff,‡ Baumgarten,§ Osler|| and others, it is more than probable that the phagocytes in a healthy individual, having healthy movements, are able to seize and assimilate the invading organisms, and it is only when an individual not well when the phagocytes lose the power to battle against the specific organism of pneumonia from prolonged exposure to cold, that pneumonia sets in. The question of repeated attacks, or of immunity from second attacks, I have not time to take up now. Personally I have had a very limited experience in the experimental study of pneumonia. At the Johns Hopkins Pathological Laboratory, I have isolated Fränkel's diplococcus from the blood and tissues of rabbits killed with Dr. Sternberg's sputa; I have also obtained the same organism from rabbits killed with prune-juice expectoration. This work, having been just begun, is of little value to report; but I hope in further work during the year to investigate the subject more extensively. The third topic which I shall consider very briefly, is

*Il Morgagni, Oct., Nov., Dec., 1888.

†loc. cit. ‡Virchow's Archiv, Vol. XCVI and XCVII.

§Zeitschrift f. Kl. Medicin, Bd. XV, 1 and 2.

||N. Y. Med. Record, April 13, 1889.

III. THE MORE RECENT TREATMENT OF PULMONARY PHTHISIS.

When I look at the number of therapeutic remedies suggested, even in the past twelve months, for the treatment of pulmonary phthisis, I feel that this part of the report might be extended indefinitely, with suggestions and speculations as to the efficacy of each remedy and the best one to use. The fact that there are so many modes of treatment published, shows the hopelessness of the attempt with our present knowledge. The curability of a disease (not the spontaneous cure) is generally in inverse proportion to the number of remedies offered for its cure. We all know with what zeal we seized upon Bergeon's method of treating consumption by rectal injection of gases, and the rather hopeful view taken by us all was shown in the report of this Section two years ago. Since that time many new remedies have come on, but the specific still remains unfound. Treatment has been carried out by—

1. Internal administration of drugs or medicines.
2. Intra-pulmonary injection.
3. Inhalations.
4. Climate; and cure occasionally occurs.
5. Spontaneously.

1. *Internal treatment.* (a) Creosote. This remedy has been tried very energetically in the past few years. Authorities too numerous to quote all give it in about the same way. In my own practice I have used it in the formula as given by Beverly Robinson.* He used beechwood creosote, and gave it in combination with chloroform and alcohol, with inhalation of the same; also, with tincture of gentian. A good combination is with cod liver oil in capsules. He is convinced that it is a remedy of great value. Russian and German authorities have not had such great success and are not so sanguine. Since January 1, 1889, I have used it in five cases; with four the effect was scarcely noticeable, or was negative, although the patients might have been worse without it. The fifth has decidedly improved, and always looks forward to the medicine and inhaler. Dr. Joseph Lefage,† assisted by Dr. Chapoteaut, obtained a product from cod liver oil which they named morrhuol, and

*Transactions of the Association of American Physicians, Vol. III.

† Biddle's *Materia Medica*, 11th ed., Phila. Blakiston, pp. 437, 438, 439.

which represents the active principle of cod liver oil. It is obtained by treating cod liver oil with 90 per cent. of alcohol, separating it from the oil and submitting it (alcohol) to distillation. Morrhual is acrid, bitter, very aromatic, and partly crystalline at ordinary temperatures. It contains iodine, bromine and phosphorus. The oil after its removal is tasteless and odorless. It is dispensed in capsules, the size of a pea, each containing about 20 centigrammes (3 grains), and representing a much larger quantity of cod liver oil. Chazeaud* has found that appetite improves under its use, digestion is regulated, weight and strength increased, cough lessened or cured, and nausea and vomiting are prevented by giving it in capsules. He gives from two to eight capsules daily, and finds that it sometimes produces acne like the cod liver. Demarco,† Ceccherelli,‡ and Houzè§ (Brussels) have all tried tannin with satisfaction to themselves and to their patients. I have had no experience it. Dochman also speaks in the highest terms of calomel.

2. *Intra-pulmonary injection.* Kremianski's method of injecting aniline into the lung tissue had a short life. Those trying it soon reported on its inutility. Other substances have been tried in this same way; but the treatment is hardly adaptable to all patients.

3. *Inhalations.* The result of the discussion at the last meeting of the British Medical Association at Glasgow, as shown by Dr. C. T. Williams,|| was, that medicated inhalations were of no lasting influence in the lung tissue. The inhalation of hydrofluoric acid, as suggested by Garcin,¶ seem to ameliorate some of the symptoms for a short time; but the effect in most cases was lost after cessation of the treatment. Dr. Louis Weigert** has reported success with inhalations of hot air—dry air, heated to 150°–180° C., [302°–356° F.] His whole plan and results are rather rose-colored.

4. *Climate.* The best results are undoubtedly obtained by climatic treatment, properly conducted under medical super-

*Lancet, 1887, II, 880.

†Lancet, 1880, II, 437.

‡Brit. Med. Jour., 1888, I, 756.

§Lancet, 1889, I, 493.

¶Brit. Med. Jour., 1888, II, 700.

¶Lancet, II, 788.

**Internationale Klinische Rundschau, No. 51.

vision, if taken at the very beginning. G. Cornet* has just published some inoculation experiments with tubercle bacilli in guinea pigs. He inoculated twelve guinea pigs with tuberculous matter; kept six confined in Berlin, and sent six to Davos, and all died alike. Such experiments are misleading. In regard to tubercle bacilli, in most of the cures vaunted by foreigners (German) writers, improvement was gauged by the diminution in the number of bacilli found and the reverse. This hardly seems to be the proper test. Although we cannot help recognizing the diagnostic importance of these bacilli, still we should keep in mind the lung or laryngeal lesion, the general health, appetite of the patient, as a key to this improvement. I have repeatedly observed, as you all have, that patients in whom there was absolutely no signs or symptoms of phthisis, as obtained by ordinary means, had their sputa laden with bacilli; while again in well marked cases, not to far advanced, the bacilli were only to be found after many examinations. Again, as we should naturally suppose, laryngeal phthisis, even at this very incipency, shows a much larger number of bacilli in the microscopic field than lung trouble. From this we see the importance of the microscope in the diagnosis of the early stage of phthisis. As above stated, Dr. G. Hunter Mackenzie† says, that the number of bacilli found in the sputa of any case does not seem to bear any reference to the severity of the case. One case may apparently improve, and yet bacilli in large numbers be found, or another case may grow worse, and the bacilli be very scanty. In the latter case, the spores remain, and they are not easy to destroy. Lastly, this disease may end

5. *Spontaneously.* Those of us who have seen and made large numbers of autopsies, will remember having seen evidences of an old tuberculous disease long since cured, a lung with signs of a healed cavity or with an old cicatrix. Vibert‡ found in the Paris Morgue, in 131 persons between the ages of 20 and 55, all of whom had died violent or sudden deaths, that evidence of phthisis existed in 25, and in 17 of these (68 per cent.) it was cured. These facts should be borne in mind by those reporting cures from new remedies.

*Centralblatt f. Klin. Medicin, No. 14, April 6, 1889.

†Edinburgh Medical Journal, January, 1889.

‡Lancet, 1888, II 598.

